

CLEAN COPY OF PENDING CLAIMS

38. A method of imparting motion to a fluid, said method comprising, providing an acoustic source adapted to generate an acoustic field, and selectively directing said acoustic field to at least one nucleation feature located relative to said fluid to impart said motion to said fluid.
39. The method of claim 38, wherein said step of directing said acoustic field comprises, focussing said acoustic field to said at least one nucleation feature.
40. The method of claim 38, wherein said step of directing said acoustic field comprises, adjusting a relative position between said acoustic source and said at least one nucleation feature to bring said at least one nucleation feature within a focal zone of said acoustic source.
43. The method of claim 38, wherein said fluid contacts a first surface, and said first surface includes said at least one nucleation feature.
45. The method of claim 43, wherein said first surface is a surface of a microchamber.
47. The method of claim 43, wherein said at least one nucleation feature includes at least one of a pit, crevice, defect, scratch, groove and ridge in said first surface.
51. The method of claim 43, wherein said fluid has a volume between about 0.1 pl and about 10 ml.
54. The method of claim 38, wherein said fluid is contained in a microchamber.
63. The method of claim 38, wherein said motion imparted to said fluid is of sufficient magnitude to cause a mixing action in said fluid.
68. The method of claim 38 comprising, positioning said at least one nucleation feature relative to an active site, and said step of providing said acoustic field comprises, providing said acoustic field with selected characteristics to promote mixing of a portion of said fluid proximate to said active site.
77. The method of claim 151, wherein said constituent is a biological sample.
113. An apparatus for imparting motion to a fluid, said apparatus comprising, an acoustic source adapted to generate an acoustic field, and a controller adapted to control operation of said acoustic source, wherein

said apparatus is further adapted to direct said acoustic field selectively to at least one nucleation feature located relative to said fluid to impart said motion to said fluid.

114. The apparatus of claim 113, wherein said acoustic source is further adapted to provide said direction of said acoustic field, and to provide said acoustic field as a focussed acoustic field to said at least one nucleation feature.

115. The apparatus of claim 113 comprising, a positioning mechanism adapted adjust a relative position between said acoustic source and said at least one nucleation feature, to bring said at least one nucleation feature within a focal zone of said acoustic source.

118. The apparatus of claim 113, wherein said fluid contacts a first surface and said at said first surface includes said at least one nucleation feature.

120. The apparatus of claim 118, wherein said first surface is a surface of a microchamber.

122. The apparatus of claim 118, wherein said at least one nucleation feature includes at least one of a pit, crevice, defect, scratch, groove and ridge in said first surface.

126. The apparatus of claim 118, wherein said fluid has a volume between about 0.1 pl and about 10 ml.

129. The apparatus of claim 113, wherein said fluid is contained in a microchamber.

137. The apparatus of claim 113, wherein said motion imparted to said fluid is of sufficient magnitude to cause a mixing action in said fluid.

142. The apparatus of claim 113, wherein said at least one nucleation feature is located relative to an active site, and said apparatus is further adapted to direct said acoustic field with sufficient specificity to promote mixing of a portion of said fluid proximate to said active site.

151. The method of claim 38, wherein said fluid is contained in a microvessel having a constituent.

152. The apparatus of claim 113, wherein said fluid is contained in a microvessel having a constituent.

153. The apparatus of claim 152, wherein said constituent is a biological sample.